What is claimed is:

1. A coated optical fiber comprising:

an optical fiber having a core surrounded by a cladding and

a radiation cured coating applied to at least a segment of an outer surface of the cladding, wherein said coating composition selected so that in response to a preload comprising the application of a stress of about 80 MPa to said coating at about 80°C and after a stress-relaxation period of at least about 1 hour, at about 80°C, a residual stress exhibited by said coating comprises at least about 60 MPa.

2. The fiber according to claim 1 wherein said coating comprises about 0-90 weight percent of an oligomeric component and about 5-97 weight percent of a monomeric component, said coating having a Young's modulus of at least about 100 MPa.

3. The fiber according to claim 2 wherein said monomeric component comprises at least one ethylenically unsaturated compound.

4. The fiber according to claim 2 wherein said coating is substantially devoid of said oligomeric component and said monomeric component comprises at least about two monomers.

5. The fiber according to claim 1 wherein said residual stress comprises at least about 68 MPa .

6. The fiber according to claim 2 wherein said coating further comprises no more than about 4.0 pph of a silane containing adhesion promoter.

7. The fiber according to claim 1 wherein said residual stress comprises at least about 76 MPa .

8. The fiber according to claim 1 wherein a thickness of said coating comprises more than about 35 μm.

9. The fiber according to claim 8 wherein said thickness of said coating comprises more than about 62.5 μm.

10. The fiber according to claim 1 wherein a Young's modulus comprises at least about 100 MPa.

11. The fiber according to claim 10 wherein said Young's modulus comprises at least about 600 MPa.

12. The fiber according to claim 1 further comprising a dual coating system applied to a second segment of said outer surface of said cladding.

13. The fiber according to claim 1 wherein said optical fiber comprises a polarization maintaining fiber.

14. The fiber according to claim 1 wherein said coating has Tg of at least about 70°C.

15. A polarization mode dispersion compensator for correcting polarization mode dispersion in an optical signal having a fast polarization mode component, a slow polarization mode component and a time differential between the components, the compensator comprising:

a phase shifter including an input and an output, wherein the input of the phase shifter is coupled to a single mode optical fiber that provides an optical signal that exhibits polarization mode dispersion, the phase shifter functioning to rotate the optical signal principal states of polarization to a desired orientation, at least a segment of the fiber coated with a composition, said composition selected so that in response to a preload comprising the application of a stress of about 80 MPa to

said coating at about 80°C and after a stress-relaxation period of at least about 1 hour, at about 80°C, a residual stress exhibited by said coating comprises at least about 60 MPa, said coating capable of transmitting a transverse stress to the fiber to controllably change the birefringence of the fiber, said composition applied to an outer surface of said fiber; and

a variable delay section including an input, an output and at least one optical fiber delay line, wherein the input of the variable delay section is coupled to the output of the phase shifter and the desired orientation of the optical signal principal states of polarization are substantially rotated to be in alignment with one of a fast axis and a slow axis of each of the fiber delay lines, and wherein the variable delay section functions to delay the principal states of polarization of the optical signal with respect to one another as a function of whether the principal states of polarization traverse said one of a fast axis and a slow axis of a given optical fiber delay line thus reducing the time differential between them.

16. The polarization mode dispersion compensator according to claim 15 wherein said composition comprises about 0-90 weight percent of an oligomeric component and about 5-97 weight percent of a monomeric component, said coating having a Young's modulus of at least about 600 MPa.

17. The polarization mode dispersion compensator according to claim 16 wherein said Young's modulus comprises at least about 1000 MPa.

18. A polarization scrambler for determining whether an optical device exhibits polarization dependent characteristics, the polarization scrambler including an input and an output, the scrambler comprising:

a first optical fiber including a first mechanical squeezer for applying a mechanical stress to the first optical fiber responsive to a first control signal, the first optical fiber having a first end, a second end, a fast axis and a slow axis, wherein the first end of the first optical fiber acts as the input of the polarization scrambler, the first mechanical squeezer aligned with the first optical fiber to engage a segment of the first optical fiber, said segment of the first optical fiber

encompassed with a first coating, said first coating selected so that in response to a preload comprising the application of a stress of about 80 MPa to said first coating at about 80°C and after a stress-relaxation period of at least about 1 hour, at about 80°C, a residual stress exhibited by said first coating comprises at least about 60 MPa; and

a second optical fiber including a second mechanical squeezer for applying a mechanical stress to the second optical fiber responsive to a second control signal, the second optical fiber having a first end, a second end, a fast axis and a slow axis, wherein the second end of the first optical fiber is coupled to the first end of the second optical fiber at an angle of about forty-five degrees with respect to the polarization axes of the first optical fiber, and wherein the second end of the second optical fiber provides the output of the polarization scrambler.

19. The polarization scrambler according to 18 wherein said first coating comprises a composition comprising about 0-90 weight percent of an oligomeric component and about 5-97 weight percent of a monomeric component, said first coating capable of transmitting a transverse stress to the fiber to controllably change the birefringence of the fiber, said first coating having a Young's modulus of at least about 100 MPa,

20. The polarization scrambler according to claim 18 wherein the second mechanical squeezer aligned with the second optical fiber to engage a segment of the second optical fiber having a second coating comprising a radiation cured composition comprising about 0-90 weight percent of an oligomeric component and about 5-97 weight percent of a monomeric component, said second coating capable of transmitting a transverse stress to the fiber to controllably change the birefringence of the fiber said second coating having a Young's modulus of at least about 100 MPa, said second coating applied to an outer surface of the second optical fiber.

21. The fiber according to claim 1 wherein said Young's modulus comprises at least about 1000 MPa.

22. A telecommunications link comprising at least one polarization mode dispersion compensator according to claim 15.

23. The telecommunication link comprising at least one polarization scrambler according to claim 18.